CLAIMS

What is claimed is:

1. A method for controlling admittance of a data packet into a memory buffer, the method comprising:

performing, prior to queuing the data packet for routing by a processor, the following:

receiving a data packet from one of at least two different ports;

determining a priority value within the data packet; and

determining an admittance group identifier for the data packet based on the priority value and the port the data packet was received; and

queuing the data packet from the memory buffer to one of a number of queues for routing by the processor upon determining that a number of data packets stored in the memory buffer and having the admittance group identifier is not greater than a threshold value.

2. The method of claim 1, further comprising discarding the data packet upon determining that the number of data packets stored in the memory buffer and having the admittance group identifier is greater than the threshold value.

3. The method of claim 1, wherein determining the priority value within the data packet is based on classifying the data packet as one of a number of packet formats.

4. The method of claim 3, wherein classifying the data packet received from one of the at least two different ports comprises classifying the data packet using instructions in a number of instruction streams, wherein each of the number of instruction streams are associated with one of the number of packet formats.

5. The method of claim 4, wherein the number of packet formats are selected from the group consisting of Internet Protocol and Ethernet.

6. The method of claim 1, wherein determining the admittance group identifier includes traversing a table of admittance group identifiers based on the priority value and the port that the data packet was received from.

7. The method of claim 6, further comprising selectively outputting the data packets from the memory buffer through the number of queues based on the admittance group identifier.

8. A method comprising:

receiving data packets from at least two different ports;

for each of the data packets, performing, prior to queuing the data packet for routing by a processor, the following:

classifying the data packet received from one of the at least two different ports;

locating a priority value within the data packet based on the classifying of the data packet;

determining an admittance group identifier for the data packet based on the priority value and the port the data packet was received;

retrieving a threshold value for storing of data packets into the memory buffer that have the admittance group identifier;

retrieving a stored value, the stored value representing a number of data packets stored in the memory buffer that have the admittance group identifier;

maintaining the data packet in the memory buffer upon determining that the stored value has not exceeded the threshold value; and

discarding the data packet upon determining that the stored value has exceeded the threshold value.

9. The method of claim 8, further comprising assigning the data packet to a queue of a number of queues to output the data packet from the memory buffer based on the priority value and the port that the data packet was received from.

10. The method of claim 9, further comprising selectively outputting the data packets from the memory buffer through the number of queues based on the priority value and the port that the data packets were received from.

11. The method of claim 8, wherein classifying the data packet received from one of the at least two different ports comprises classifying the data packet using instructions in a number of instruction streams, wherein each of the number of instruction streams are associated with one of a number of packet formats.

12. The method of claim 11, wherein the number of packet formats are selected from the group consisting of Internet Protocol and Ethernet.

13. The method of claim 11, wherein classifying the data packet using instructions in a number of instruction streams comprises:

selecting a byte of the data packet based on an offset value stored in the instruction;

masking the selected byte of the data packet based on a mask value stored in the instruction; and

comparing the masked selected byte of the data packet to a comparison value stored in the instruction based on an operation code stored in the instruction.

14. The method of claim 13, further comprising:

changing a state of one of the number of instruction streams to failed upon determining that the comparing for an instruction in the one of the number of instruction streams failed; and

classifying the data packet using instructions in the number of instruction streams that do not have a failed state.

15. An apparatus comprising:

preclassification circuitry coupled to receive a number of data packets from a number of ports, wherein the preclassification circuitry is to determine a priority value for each of the number of data packets;

control circuitry coupled to the preclassification circuitry; and

a memory buffer coupled to the control circuitry;

a number of queues coupled to a number of processors, wherein the control circuitry is to queue a data packet of the number of data packets into the number of queues from the memory buffer upon determining that a number of the data packets stored in the memory buffer, which are received on the port that the that the data packet is received and have a priority value that equals the priority value of the data packet, has not exceeded a threshold value.

16. The apparatus of claim 15, wherein the control circuitry is to discard the data packet upon determining that the number of data packets stored in the memory buffer, which are received on the port that the data packet was received and have a same priority value that was determined for the data packet, has exceeded the threshold value.

17 The apparatus of claim 15, wherein the preclassification circuitry is to determine the priority value based on classifications of the number of data packets as one of a number of packet formats.

18. The apparatus of claim 17, wherein the preclassification circuitry is to determine the priority value based on classifications using instructions in a number of instruction streams, wherein each of the number of instruction streams are associated with one of the number of packet formats.

19. The apparatus of claim 18, wherein the number of packet formats are selected from the group consisting of Internet Protocol and Ethernet.

20. The apparatus of claim 15, wherein the preclassification circuitry is to assign each of the number of data packets to an admission group and a queue to output the data packet from the memory buffer based on the priority value and the port that the data packet is received from.

21. The apparatus of claim 20, wherein the control circuitry is to selectively output the number of data packets from the memory buffer through the number of queues based on the priority value and the port that the number of data packets are received from.

22. An apparatus for controlling admittance of a data packet into a network element, the apparatus comprising:

preclassification circuitry coupled to receive a number of data packets from one of at least two different ports, wherein the preclassification circuitry is to determine a priority value for each of the number of data packets;

admission control circuitry coupled to the preclassification circuitry, wherein the admission control circuitry is coupled to receive the priority value and a port value for the port of the one of at least two different ports that the number of data packets are received from; and

a memory buffer coupled to the admission control circuitry, wherein the admission control circuitry is to queue a data packet of the number of data packets into one of a number of processing queues upon determining that a number of the data packets stored in the memory buffer, which are received on the port that the that the data packet is received and have a priority value that equals the priority value of the data packet, has not exceeded a threshold value.

23. The apparatus of claim 22, wherein the preclassification circuitry is to assign each of the number of data packets to an admission group and a processing queue of the number of processing queues to output the data packet from the memory buffer based on the priority value and the port that the data packet is received from.

24. The apparatus of claim 23, wherein the memory control circuitry is to selectively output the number of data packets from the memory buffer through the number of processing queues based on the priority value and the port that the number of data packets are received from.

25. The apparatus of claim 22, wherein the preclassification circuitry is to determine the priority value based on classifications using instructions in a number of instruction streams, wherein each of the number of instruction streams are associated with one of the number of packet formats.

26. The apparatus of claim 25, wherein the number of packet formats are selected from the group consisting of Internet Protocol and Ethernet.

27. A machine-readable medium that provides instructions for controlling admittance of a data packet into a memory buffer, which when executed by a machine, causes the machine to perform operations comprising:

performing, prior to queuing the data packet for routing by a processor, the following:

receiving a data packet from one of at least two different ports;

determining a priority value within the data packet; and

determining an admittance group identifier for the data packet based on the priority value and the port the data packet was received; and

queuing the data packet from the memory buffer to one of a number of queues for routing by the processor upon determining that a number of data packets stored in the memory buffer and having the admittance group identifier is not greater than a threshold value.

28. The machine-readable medium of claim 27, further comprising discarding the data packet upon determining that the number of data packets stored in the memory buffer and having the admittance group identifier is greater than the threshold value.

29. The machine-readable medium of claim 27, wherein determining the priority value within the data packet is based on classifying the data packet as one of a number of packet formats.

30. The machine-readable medium of claim 29, wherein classifying the data packet received from one of the at least two different ports comprises classifying the data packet using instructions in a number of instruction streams, wherein each of the number of instruction streams are associated with one of the number of packet formats.

31. The machine-readable medium of claim 30, wherein the number of packet formats are selected from the group consisting of Internet Protocol and Ethernet.

32. The machine-readable medium of claim 27, wherein determining the admittance group identifier includes traversing a table of admittance group identifiers based on the priority value and the port that the data packet was received from.

33. The machine-readable medium of claim 32, further comprising selectively outputting the data packets from the memory buffer through the number of queues based on the admittance group identifier.

34. A machine-readable medium that provides instructions, which when executed by a machine, causes the machine to perform operations comprising:

receiving data packets from at least two different ports;

for each of the data packets, performing, prior to queuing the data packet for routing by a processor, the following:

classifying the data packet received from one of the at least two different ports;

locating a priority value within the data packet based on the classifying of the data packet;

determining an admittance group identifier for the data packet based on the priority value and the port the data packet was received;

retrieving a threshold value for storing of data packets into the memory buffer that have the admittance group identifier;

retrieving a stored value, the stored value representing a number of data packets stored in the memory buffer that have the admittance group identifier;

maintaining the data packet in the memory buffer upon determining that the stored value has not exceeded the threshold value; and

discarding the data packet upon determining that the stored value has exceeded the threshold value.

35. The machine-readable medium of claim 34, further comprising assigning the data packet to a queue of a number of queues to output the data packet from the memory buffer based on the priority value and the port that the data packet was received from.

36. The machine-readable medium of claim 35, further comprising selectively outputting the data packets from the memory buffer through the number of queues based on the priority value and the port that the data packets were received from.

37. The machine-readable medium of claim 34, wherein classifying the data packet received from one of the at least two different ports comprises classifying the data packet using instructions in a number of instruction streams, wherein each of the number of instruction streams are associated with one of a number of packet formats.

38. The method of claim 37, wherein the number of packet formats are selected from the group consisting of Internet Protocol and Ethernet.

39. The method of claim 37, wherein classifying the data packet using instructions in a number of instruction streams comprises:

selecting a byte of the data packet based on an offset value stored in the instruction;

masking the selected byte of the data packet based on a mask value stored in the instruction; and

comparing the masked selected byte of the data packet to a comparison value stored in the instruction based on an operation code stored in the instruction.

40. The method of claim 39, further comprising:

changing a state of one of the number of instruction streams to failed upon determining that the comparing for an instruction in the one of the number of instruction streams failed; and

classifying the data packet using instructions in the number of instruction streams that do not have a failed state.